**Whatsapp CRM**

Creating a real-time application that integrates with the WhatsApp Business API that processes incoming messages via webhooks, broadcasts them in real-time to the frontend.

This Application aimed to replicate the basic Whatsapp functionality.

* Sending messages using the WhatsApp Business API.
* Receiving webhook events for incoming messages.
* Broadcasting messages in real-time to the frontend.

Technologies used:

* **Node.js** and **Express.js** for the backend.
* **Socket.IO** for real-time communication.
* **ngrok** for exposing the local server to the internet.
* **React** for the frontend.

For this you need the Whatsapp Business API token. To gain that, follow the steps below

First Go to Meta for Developers website and register yourself as a Developer

Create a New App and give the necessary Details like (App name, contact email)

Add the usecases:

Check for whatsapp Business. If not there, click other

Select app type as Business

Then click create App

Now, In the Add products section, click setup whatsapp.

In the Whatsapp business platform API, select the business portfolio and click continue.

**API Setup**

In the next window, click start using Api

In the API setup page,

Click Generate API token, it will take you to the next page

There, Select your Whatsapp Account, in this case you have to select the test number and click continue.

Now you got your API token. Copy and save it.(Note: it is a temporary one, it will get expired frequently. So keep an eye on it).

With this test number, you can add upto five contacts for chat.

**To chat full fledge with anyone, you need a fresh Phone number and other Business documents as the META’s Policy is strict, it allows only a new whatsapp business account with verified business documents.**

**Configure Webhooks**

In the next step, create a webhook for capturing and processing incoming messages.

To configure webhook, you need to provide a callback url to allow the WhatsApp API to communicate with the local server and verify token.

As META’s Policy is very strict, It only accepts a secure url like https://

To allow the WhatsApp API to communicate with the local server, I used ngrok:

Install ngrok:

**npm install -g ngrok**

Start ngrok and forward requests to the local server:

**ngrok http 5000**

Update the webhook URL in the WhatsApp Business API settings with the https:// URL provided by ngrok (e.g., https://c22a-...ngrok-free.app/webhook).

And Finally Add your verify token and click verify and save.

Below you can add the numbers you want to chat(test).

**Build Application**

Next Build your Application both frontend and backend.

For frontend:

I used React framework, Socket.IO to listen incoming messages

For backend:

Use Node js and Express js and To achieve real-time message updates, I integrated Socket.IO

That’s it, Now you can Test your application for its working and functionality.

**Challenges Faced:**

1. Webhook Verification Failure: Initially, the webhook verification failed because the verify token used in the code didn’t match the one configured in the WhatsApp Business API settings. After correcting this, verification succeeded.
2. Receiving 502 Bad Gateway Errors: These errors occurred because ngrok wasn’t properly forwarding requests to the local server. Restarting both ngrok and the server resolved the issue.
3. Importance of Webhook Validation: Matching the verify token exactly is critical to successful webhook integration.
4. Frequent Expiration of API token
5. Limited contacts Access.

**Future Improvements**

* Deploying to Production: Replace ngrok with a cloud-based solution like AWS or Heroku.
* Enhancing the UI: Add features like message timestamps, sender names, and file attachments.